

## **B. REMARKS**

Claims 1-55 are pending in the application. Claims 1-9 and 17-22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Chen, U.S. Patent No. 5,226,723. Claims 10-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Telefonbau, German Publication No. 1 099 403. Claims 23-28 stand rejected under 35 U.S.C. § 103(a) as being obvious over Chen in view of Caldwell, U.S. Patent No. 5,594,222. Claims 29-50 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over GB 1585392 (“GB ‘392”) in view of Chen. Claims 51-55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over GB ‘392 in view of Caldwell. The examiner has objected to claim 34 based on a matter of form.

Applicants respectfully traverse each of the foregoing bases for rejection and objection. Notwithstanding, Applicants hereby amend claims 1 and 29 to more distinctly claim the invention. Applicants also hereby amend claim 38 to correct an error therein. Further, Applicants add new claims 56-59 to more completely claim the invention.

### **1. Chen Does Not Disclose A Light Emitting Device That Is Electrically Connected To An Electrical Conductor Attached to A Substrate Defining A Penetration.**

Claim 1, as currently amended, recites:

An integrated low profile display, comprising:

a substrate having a first surface and a second surface;

said substrate defining at least one penetration extending through said substrate from said first surface to said second surface;

each said penetration having a side wall, an entrance opening defined by said first surface, and an exit opening defined by said second surface; and

at least one light emitting device;

each said light emitting device mounted to said first surface of said substrate proximate the entrance opening of a corresponding

penetration and adapted to selectively admit light to said penetration via said entrance opening; and

each said light emitting device being electrically connected to a corresponding electrical conductor attached to said first surface of said substrate.

(Emphasis added.) Applicants respectfully submit that Chen does not disclose the foregoing combination of elements. Chen discloses a reflector (*i.e.*, a first substrate) defining a plurality of penetrations and a printed circuit board (*i.e.*, a second substrate) bearing a plurality of light emitting diodes. Importantly, the printed circuit board of Chen, *i.e.*, the second substrate on which the light emitting diodes are mounted and to which they are electrically connected, does not define any penetrations. Thus, Chen does not disclose “a substrate defining at least one penetration” and “at least one light emitting device . . . mounted to said first surface of said substrate proximate the entrance opening of a corresponding penetration . . . each said light emitting device being electrically coupled to a corresponding electrical conductor attached to said first surface of said substrate.” (Emphasis added.)

In a previous response dated November 22, 2007, Applicants proposed amending claim 1 to recite “each said light emitting device being electrically coupled to a corresponding electrical conductor disposed on said first surface of said substrate” (emphasis added), and Applicants argued that Chen does not disclose a light emitting device electrically coupled to a corresponding electrical conductor disposed on a substrate defining a penetration. In the Advisory Action mailed December 7, 2005, the examiner stated that “Chen [US 5,226,723] discloses a substrate [2] defining at least one penetration [at 21], a light emitting device [3, 1] mounted to a surface of the substrate [2], and the light emitting device [3, 1] being electrical connected to a corresponding conductor [31] disposed on the substrate [2] (figures 1 and 2).” Applicants respectfully disagree.

Applicants submit that Chen does not disclose a light emitting device electrically coupled to an electrical conductor “disposed on” a substrate defining a penetration, as the term “disposed on” is used by Applicants. At most, Chen discloses a light emitting device electrically coupled to an electrical conductor making incidental contact with a substrate defining a penetration. Notwithstanding, in order to more distinctly claim the invention, Applicants hereby amend claim 1 to recite “said light emitting device being electrically coupled to a corresponding electrical conductor attached to said first surface of said substrate.” The electrical conductor 31 of Chen is not attached to a substrate defining a penetration. Further, nothing in Chen suggests that it would be desirable to attach such conductor to such substrate, nor would one skilled in the art recognize any obvious reason for doing so.

The examiner further stated in the Advisory Action that “the Applicant’s drawings show the light emitting device [34] mounted to the substrate [12], which does not define any penetrations.” Applicants respectfully submit that the examiner is mistaken. FIGS. 1A and 2 clearly show, and corresponding portions of the specification describe, a substrate 12 defining plural penetrations 18 that extend from one side of substrate 12 to the other. In these figures, diffuser 30 overlies one end of penetrations 18. Importantly, as illustrated and described in the present application, diffuser 30 and substrate 12 are independent structures. Further, diffuser 30 is optional, and the present invention can be practiced with or without it. *See* specification at 8-9.

Based on at least the above, Applicants respectfully submit that claim 1 is allowable over the cited prior art, as are claims 2-28 and 56-57 which depend from claim 1. As such, Applicants respectfully submit that the examiner’s further bases for rejection of claims 2-28 are moot. Applicants respectfully request reconsideration and allowance of claims 1-28 and 56-57.

## 2. GB '392 Teaches Away From An Opaque Sidewall

Claim 29 recites a substrate defining at least one cavity having an entrance opening and a closed end, said cavity having a substantially opaque side wall. The examiner has acknowledged that GB '392 does not disclose a substrate defining a cavity having a substantially opaque side wall, but has taken the position that "[i]t would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the side wall of the cavity by the substantially opaque as taught by Chen for purpose of increasing brightness output." September 22, 2005 Office Action at ¶ 7. Applicants respectfully disagree and submit that neither GB '392 nor Chen provides any motivation to combine these references. Indeed, a person of ordinary skill in the art would understand GB '392 to teach away from such a combination because the resulting device would be unable to perform its intended function. As such, Applicants submit that the instant obviousness rejection is improper and respectfully request reconsideration and withdrawal thereof.

GB '392 teaches that a transparent sidewall is desirable to enable light to disperse through the substrate:

It is understood that the radiation of the diode should be capable of directly illuminating the part of the inscription 5 represented on the drawing, but this radiation also travels transversely in the panel to contribute with other luminous diodes to the illumination of other distant inscriptions.

GB '392 at p. 2, ll. 63-69 (emphasis added). In a previous response dated November 22, 2005, Applicants pointed out that modifying the side wall of the cavity disclosed in GB '392 by coating it with an opaque material would defeat the purpose of the apparatus as described above. The examiner replied that GB '392 "discloses it is possible, if desired, to use diodes of another type having a more direct radiation...to illuminate solely one area of small diameter" and that it therefore "would have been obvious to modify the side wall with an opaque material [a reflective surface] of Chen [US 5,226,723] to concentrate more light output at the desired small area."

December 7, 2005 Advisory Action. Applicants maintain their disagreement with the examiner's conclusion.

Applicants submit that GB '392 is directed to an apparatus for providing backlighting for an instrument panel having indications or inscriptions which have to be illuminated in order to be readable. GB '392 at p. 1, ll. 10-13. These inscriptions are defined by gaps 5 in an opaque layer 4 overlying the plexiglass plate 1 defining cavity 6 which receives an LED 7. *Id.* at p. 2, ll. 35-58. One skilled in the art would recognize that such inscriptions typically would occupy an area on plate 1 greater than the cross-sectional area of the cavity receiving LED 7. This is evident from GB '392 Fig. 2, which shows a representative gap 5 well outside the area defined by cavity 6 as projected onto the surface of plate 1. Clearly, in order for the light from LED 7 to reach the surface of plate 1 in the vicinity of gap 5, the light from LED 7 must spread laterally through plate 1, as discussed above.

The passage cited by the examiner in the Advisory Action simply teaches that the degree to which light spreads laterally through plate 1 can be controlled by using a particular type of LED. It does not teach that it would be desirable to channel light energy to the surface of plate 1 in the manner contemplated by the reflector of Chen. One skilled in the art would recognize that the function of the invention set forth in GB '392 would be impaired or defeated if the light were channeled directly toward the surface of plate 1 by coating the walls of cavity 6 with an opaque material. Indeed, GB '392 recognizes the difficulty in using opaque surfaces, such as hoods, to direct light acceptably. GB '392 at p. 2, ll. 76-78.

Based on at least the above, Applicants respectfully submit that claim 29 is allowable over the cited prior art, as are claims 30-55 and 58-59 which depend from claim 29. As such,

Applicants respectfully submit that the examiner's further bases for rejection of claims 30-55 are moot. Applicants respectfully request reconsideration and allowance of claims 29-55 and 58-59.

**3. The Limitation Set Forth In Claim 34 Is Unique**

The examiner has objected to claim 34 on the grounds that "the limitation 'the side wall is covered with a substantially opaque material', is repeated." Applicants respectfully disagree.

Claim 34 in its entirety recites:


34. The apparatus of claim 29 wherein said side wall is covered with a substantially opaque material.

Claim 29 from which claim 34 depends recites more broadly "said cavity having a substantially opaque side wall." Claim 29 is silent on the mechanism by which the side wall is opaque and, therefore, covers a side wall that is opaque by means other than an opaque material covering said sidewall. For example, without limitation, the side wall recited in claim 29 could be opaque because the material comprising the substrate defining the side wall is itself opaque, thus obviating the need for, but not precluding the use of, an opaque covering on the side wall. As such, Applicants submit that claim 34 is narrower than and not duplicative of claim 29 and request reconsideration and withdrawal of the pending objection.

Applicants respectfully submit that the application is in condition for allowance and respectfully request reconsideration and allowance thereof.

Respectfully submitted,

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